Topic: IM2 – 1.2 (N – 1) Simplifying Radicals	**Standard(s):** N.RN.2	Notes
Essential Question: How can I simplify radicals using prime factors?		

Questions / Big Ideas

Negative Bases & Radicands with Even and Odd Exponents

- Negative Bases / Radicands with
  - Even Exponents or Roots: Positive or Imaginary
    ex. $(-2)^2 = (-2)(-2) = 4$
    ex. $\sqrt{-2}$: imaginary
  - Odd Exponents or Roots: Negative
    ex. $(-2)^3 = (-2)(-2)(-2) = -8$
    ex. $\sqrt[3]{-8} = -2$

Simplifying Radicals

- Sometimes you cannot factor the base into only identical factors.
- Factor the radicand (or base) down to prime factors.
- Factor out ONE factor value for every set equal to the index (root).
- Simplify.
- Example:

$$\sqrt[3]{24^2} = \sqrt[3]{(2 \cdot 2 \cdot 2 \cdot 3)^2} = \sqrt[3]{(2^3 \cdot 3)^2} = \sqrt[3]{2^6 \cdot 3^2} =$$
$$\sqrt[3]{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3^2} = 2 \cdot 2\sqrt[3]{9} = 4\sqrt[3]{9} = 4 \cdot 9^{\frac{1}{3}}$$

Guided Practice

1. Simplify the following radical expression:
   $\sqrt{200x^3}$

2. Simplify the following radical expression:
   $\sqrt[3]{243m^4n}$

Questions / Big Ideas	3. Simplify $\sqrt[3]{-27a^5}$

Perfect Squares

$1^2 = 1 \cdot 1 = 1$	$\sqrt{1} = 1$
$2^2 = 2 \cdot 2 = 4$	$\sqrt{4} = 2$
$3^2 =$	$\sqrt{\quad} = 3$
$4^2 =$	$\sqrt{\quad} = 4$
$5^2 =$	$\sqrt{\quad} = 5$
$6^2 =$	$\sqrt{\quad} = 6$
$7^2 =$	$\sqrt{\quad} = 7$
$8^2 =$	$\sqrt{\quad} = 8$
$9^2 =$	$\sqrt{\quad} = 9$
$10^2 =$	$\sqrt{\quad} = 10$
$11^2 =$	$\sqrt{\quad} = 11$
$12^2 =$	$\sqrt{\quad} = 12$
$13^2 =$	$\sqrt{\quad} = 13$
$14^2 =$	$\sqrt{\quad} = 14$
$15^2 =$	$\sqrt{\quad} = 15$

Summary: _____

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